

REMARKS

Specification

By the attached substitute (and redline) specification page 1, applicants inserted “and now U.S. Patent No. 6,005,850,” which should resolve the examiner’s objection.

Claim Objections

By the above amendments, applicants re-worded claims 40-47 and 49, line 1, to correct an informality. In the mentioned claims, the term “A communication system” has been changed to “The communication system,” which should resolve the examiner’s objection.

Claim Rejections

Rejection of Claim 32 and 39 Under 35 USC §112, Second Paragraph

In his comments, the examiner appears to have rejected claims 32 and 39 under §112, Second Paragraph, even though these claims were not mentioned in the summary of rejected claims set forth in the first sentence of the rejection. See examiner’s Detailed Action, p.2. Applicants nevertheless assume that claims 32 and 39 were rejected and respond accordingly to examiner’s analysis of claims 32 and 39.

Rejection Under 35 USC §112, Second Paragraph

By the above amendment, applicants re-worded a number of claims for clarification. Recitals of claim 22, line 9, and claim 32, line 5 have been changed from “the shared channel” to “the first shared channel.” The recitals of claims 22, line 10 and claim 32, lines 6-7 have been changed from “the internetwork address” to “an internetwork address” to clarify the invention claimed thereby. Recitals of claim 22, line 13, and claim 32, line 14, have been changed from “an internetwork header” to “another internetwork header.” Claim 22 line 15 has been changed from “a message” to “a second message.” The term “of receiving a message” has been changed to “of receiving the second message.”

Claim 26, line 2; claim 30 lines 2-3; and claim 31, line 2, have been changed from “a second plurality of packets” to “the second plurality of packets.”

In claim 30, line 4, the term “the signal,” has been changed to, “a signal.” In claim 31, line 2, the term “the cable network” has been modified to “a cable network.”

The recital, “One of said upstream channels” in claim 43 line 4 has been changed to “one of the at least one of upstream channel” to better clarify the limitation.

The recitals of claim 44, lines 4-5, have been changed from “the other channel” and “the available channels” to “other channel” and “available channels.”

Claim 46, lines 5 and 6, has been changed from “the remote interface” to “the remote interface associated with the communication channel.” Claim 46, line 4, has been changed from “the other channel” to “a different

channel” also for clarification purposes. Claim 46, line 5 has been changed from “the other channel” to “the different channel.”

In claim 47, line 2, the recital, “an upstream channel” has been changed to “said upstream channel.”

In claims 50-51, line 1, “a device” has been changed to “the switcher.” Claim 51, line 1 has further been modified where “the switching device” has been changed to “the switcher.” Claim 52, line 1 has been reworded from “the device” to “the switcher” and from “the quality characteristics” to “quality characteristics.”

Rejection of Claims 39, 53, 54 Under 35 USC 103(a)

The examiner rejected claims 39, 53, and 54 as being unpatentable over Jandrell in view of Carr ‘466. In particular, the examiner states that in col. 1, line 60, through col. 2, line 7, Carr discloses a “director implemented in control processor which maintains the bi-directional low bandwidth channel and switches to the high bandwidth channel in response to a command,” and that such feature can be combined with Jandrell to render obvious the inventions of claims 39, 53, 54 (Examiner’s Action, p. 8).

The referenced portion of Carr ‘446, however, because of its effective date, is inapplicable to all claims. The information in Carr ‘446 cited by the examiner has an effective date of *May 9, 1995*. Applicants’ application is a division of application No. 08/426,920 (patent No. 5,586,121) (‘121 patent), having an effective date of *April 21, 1995*, before the relevant disclosures of the Carr ‘446 patent. The relevant limitations of applicants’ claims 39, 53, and 54 may be found within the ‘121 patent.

Carr '446 is a continuation-in-part of U.S. patent application Ser. No. 08/221348 ('348 application) and combines disclosures from the '348 application with disclosures unique to Carr '446; the '348 application has an effective filing date of March 31, 1994. The disclosures unique to the Carr '446 patent has an effective date of *May 9, 1995*. Carr '446 in col. 1, lines 22-26 discloses that the description of the new material begins at the section titled "Using the Bidirectional Low-Speed Communication Channel," col. 13, line 6, and the new figures beginning with Fig. 6. The examiner's citations to Carr '446, col. 1 line 60 to col. 2, line 7, is drawn to disclosure having an effective date of *May 9, 1995*. For example, a "director controlling the other components to establish a bi-directional low bandwidth channel and a unidirectional high bandwidth channel" and the "director determin[ing] which channel is to be used to transfer data between customer premise equipment and a service provider" is first disclosed in col. 14, lines 6-44.

Therefore, applicants believe the rejection of claims 39, 53 and 54, as well as any rejection that might be applied relative to this aspect of Carr '446 against claims 22, 26-38, and 40-52 should be withdrawn.

Rejection of Claims 27, 31, 34, 38, 43 Under 35 USC 103(a)

The examiner rejected claims 27, 31, 34, 38, 43 without referring to the specific limitations of the claims. At page 6 of the Detailed Action, these claims were rejected as being unpatentable over Jandrell (Jandrell '357) in view of Carr et. al. (Carr '446). Reference was made to the claims in the second paragraph set forth at page. 7 of the examiner's Detailed Action. There, the examiner indicated that Jandrell '357 did not teach the

use of the cable network recited in the claims. The examiner, however, did not cite or apply references to the specific recited limitations to support the rejection. In particular, claim 27 recites the limitation “wherein the first and plurality of second channels include a cable network, where the step of sending a second plurality of packets includes sending the second plurality of packets over the cable network.”, Claim 31 recites the limitation “each of the plurality of second channels have respective frequencies in a cable network, and the step of sending a second plurality of packets includes transmitting on one of the respective frequencies.” Claim 34 recites the limitation “wherein the first... [and] second channels include the cable network, and the transmitter transmits the second plurality of packets over the cable network.” Claim 38 recites the limitation “wherein the first... [and] second channels includes the cable network, each of...second channels having respective frequencies in the cable network, and the transmitter transmits the second plurality of packets over the cable network.” Claim 43 recites the limitation “the shared medium comprises one of a hybrid fiber coaxial cable, an over-the-air broadcast medium, a cellular broadcast medium, a direct satellite broadcast medium, a CATV broadcast and an RF radio broadcast and wherein one of the at least one of upstream channel is one of a selected lower speed upstream channel located on the shared medium, a lower speed telephone return line, a lower speed cellular return channel, an over-the-air RF transmission and a point-to-point electromagnetic transmission.” At least a portion of these limitations are important structural and/or operational features of the claims. For example, the limitation describing an upstream and downstream cable network advantageously enables the communication system to quickly transfer information both downstream and, importantly, upstream. Fast upstream

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transfer is desirable, for example, for clients in a heavy interactive session, such as an online meeting. Other limitations not supported in the references are also lacking in the cited references. Since specific disclosure in the cited references was not point out by the examiner, we believe the rejection contravenes the provisions of 37 CFR 1.104(a)(1), which requires the examiner to be complete in rejection (at least complete enough to enable applicants to formulate a reply). On this basis, applicants believe the rejection should be withdrawn.

Rejection of Claims 40, 41, 44, 47, 49, 50, 51 Under 35 USC 103(a)

The examiner rejected claims 40, 41, 44, 47, 49, 50, 51 without making any comments. At page 6 of the Detailed Action, these claims were rejected as being unpatentable over Jandrell '357 in view of Carr '446, but no reference thereafter was cited to the specific limitations of these claims. Applicants respectfully request examiner to cite the best reference(s) in accordance with the provisions of 37 CFR §1.104(c)(2).

In particular, claim 40 recites "a detector that detects a quality characteristic of a communication channel, wherein the channel switcher switches to another communication channel depending on the detected quality characteristic." Claim 41 recites the limitation "the channel switcher comprises circuitry configured for switching to another communication channel if the detected quality characteristic deviates sufficiently from a norm." Claim 44 recites "channel switcher comprises equipment for determining the availability of at least one channel; and a channel selector for selecting as other channel a suitable channel from available channels." Claim 47 recites the limitation "detector that detects a characteristic of said

upstream channel, the detector operating at an upstream location.” Claim 49 recites “detector that detects a quality characteristic of a communication channel, wherein the switcher switches to another communication channel based on the detected quality characteristics.” Claim 50 recites “the switcher comprises circuitry configured for switching to another channel if a detected quality characteristics deviates sufficiently from a reference.” Finally, claim 51 recites “the switcher [comprising] circuitry configured for switching to another communication channel based on sufficient deviation of detected quality characteristics from corresponding predetermined norms.” The examiner did not point out disclosure of these recited limitations in the cited art. See §1.104(a)(1), which requires the examiner to be complete in his rejection. Applicants also reserve a right to respond to any new grounds of rejection of the originally examined claims. See 37 CFR §1.111(b) requiring applicant to be specific and distinct in pointing out supposed error and 37 CFR §1.104(c)(2) requiring examiner to cite the best references.

Rejection of Claims 22 and 32 Under 35 USC 103(a)

Claim 22 and 32 were rejected as being unpatentable over Jandrell ‘357 in view of Carr ‘446. Specifically, the examiner cites that Jandrell ‘357 teaches all the limitations of claims 22 and 32 except the asymmetric communication whereby the second channels transmit at a speed lower than the first channel and limitation of the channel switching. In particular, the examiner provides at page 6 of the Detailed Action cites Jandrell ‘357, col. 9, lines 22-33, which recite, “the transponder responding to the control signals, which are periodically transmitted by any one of the array of base station transceiver stations whereby once synchronized with the base station network, the transponders are polled for communications or generate a

request for service in response to a subscriber.” The examiner indicated this disclosure suggested the limitation, “sending of periodic operability indication messages,” as recited in claims 22 and 32.

We studied Jandrell ‘357 and do not find that it teaches the periodic operability indication messages, as the examiner purports. The operability indication messages differ, for example, from a synchronization message, a polling signal, or a request generation. The language of claim 22 and 32 draw a distinction between packet sending, receiving channel determination messages and operability indication messages. Claims 22 and 32 have been amended to bring forth the distinction. In addition, Jandrell ‘357 does not suggest an operability indication message, but is believed to only disclose various responses and request generations (e.g., Col. 28, lines 64-67 and Col. 29 lines 1-5, discussing request generation and polling). Fig. 13 of Jandrell ‘357, for example, discloses a synchronization message, polling, and service request. Carr ‘446 simply does not suggest the operability indication message recited in applicants’ claim 22 or 32 (see, e.g., Col. 16, lines 27-32, lines 52-58). Because Jandrell ‘357 and Carr ‘446, in combination, do not disclose an operability indication message, as discussed above, all limitations for claims 22 and 32 are not met. See MPEP §2143.03, which requires that “all” elements of the claim must be fairly taught or suggested to support a rejection.

Rejection Under 35 USC 103(a)

Applicants respectfully traverse the substantive basis of the rejection. Jandrell ‘357 discloses a location method for locating vehicles (e.g., Fig. 5, Col. 19, lines 45-47; Col. 12, lines 32-35) and for short, low bandwidth

mobile vehicle / phone communication. The disclosure is illustrated by the ARRAY system of triangular cells (e.g., Fig. 2 and 3b) and the optimization of the system for short air-time messages of low bandwidth, i.e., voice messages or simple signals (e.g., Col. 9, lines 34-44; Col. 15 lines 20-25), and preferred choice of frequencies (spread-spectrum AVM) (e.g., Col. 9, lines 48-52). In contrast, the applicants' invention first relates to communication, in particular faster communication between a client and a server, and not vehicle location.

The examiner purported motivation to combine Jandrell '357 and Carr '446 is that Carr '446 teaches the advantage of combining high bandwidth channels on CATV for personal computers with Jandrell to achieve efficient system operation (See Examiner's Action, p. 8). Applicants respectfully disagree with the Examiner's characterization of motivation to combine Jandrell '357 with Carr '446.

First, Jandrell '357 and the applicants are solving different problems. The problem in Jandrell '357 is to maximize and not "waste" the limited bandwidth available for small, short messages (col. 15, lines 20-24), for example by not having copious IP headers. Jandrell '357 describes this efficiency view in its disclosure of addressing (col. 23, lines 30-40) and its explicit rejection of a continuous connection channel system (col. 15, lines 15-37).

One of the problems applicants faced but not Jandrell '357 is delivering a greater quantity of data, downstream and in some cases upstream, at a greater speed over an asymmetric network. Jandrell does not address this important problem; therefore there is little motivation to combine Carr '446 and Jandrell '357.

Accordingly, applicants kindly request the Examiner to reconsider the question of motivation as applied to the combination of Carr '446 and Jandrell '357.

Conclusion

Re-consideration and allowance is respectfully requested.

Respectfully Submitted,



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APPENDIX
REDLINE VERSION OF AMENDED CLAIMS

Serial No. /09110,135

(September 27, 2001)

22. (Twice amended) In an asymmetric communication system including a server, a plurality of clients, a shared first channel for sending packets from the server to the plurality of clients, a plurality of second channels for sending packets from the clients to the server, a method of operating one of the clients, the method comprising the steps of:

sending operability indication messages on one of the second channels;

receiving a first plurality of packets sent from the server, by receiving the first plurality of packets from the first shared channel at a first speed, each of the first plurality of packets including an internetwork header with [the] an internetwork address associated with the one of the clients;

sending a second plurality of packets to the server, by sending the second plurality of packets over the one of the second channels at a speed lower than the first speed, each of the second plurality of packets including [an] another internetwork header with the internetwork address associated with the one of the clients;

receiving a second message; and

sending operability indication messages on another one of the second channels, the other one of the second channels being determined by the message received in the step of receiving [a] the second message.

26. (Amended) The method of claim 22 wherein the plurality of second channels includes a telephone network, and the step of sending [a] the second plurality of packets includes:

sending the second plurality of packets over the telephone network.

30. (Amended) The method of claim 22 wherein the first channel includes a satellite broadcast network, and the plurality of second channels include a telephone network, and the step of [a] the second plurality of packets sending includes:

sending [the] a signal over the telephone network.

31.(Amended) The method of claim 22, wherein each of the plurality of second channels have respective frequencies in [the] a cable network, and the step of sending [a] the second plurality of packets includes transmitting on one of the respective frequencies.

32. (Amended) A client for an asymmetric communication system including a server, a shared first channel for sending packets from the server, the shared first channel, a plurality of second channels for sending packets to the server, the client comprising:

a receiver that receives a first plurality of packets sent from the server, by receiving the first plurality of packets, by receiving the first plurality of packets from the first shared channel at a first speed, each of the first plurality of packets including an internetwork header with [the] an internetwork address associated with the client; and

a transmitter that transmits periodic operability indication messages on one of the second channels and, responsive to a received message

received by the client, subsequently transmits periodic operability indication messages on another one of the second channels, the other one of the second channels being determined by the received message, and transmits a second plurality of packets to the server, by sending the second plurality of packets over the one of the second channels at a speed lower than the first speed, each of the second plurality of packets including an internetwork header with the internetwork address associated with the client.

40. (Amended) [A] The communication system according to claim 39 wherein the control system further includes

a detector that detects a quality characteristic of a communication channel,

wherein the channel switcher switches to another communication channel depending on the detected quality characteristic.

41. (Amended) [A] The communication system according to claim 40 wherein the channel switcher comprises circuitry configured for switching to another communication channel if the detected quality characteristic deviates sufficiently from a norm

42. (Amended) [A] The communication system according to claim 41 wherein the quality characteristic is one of time from last operability indication, signal-to-noise ratio, error frequency and busy signal.

43. (Amended) [A] The communication system according to claim 39 wherein the shared medium comprises one of a hybrid fiber coaxial cable, an over-the-air broadcast medium, a cellular broadcast medium, a direct

satellite broadcast medium, a CATV broadcast and an RF radio broadcast and wherein [the] one of the at least one of upstream channel is one of a selected lower speed upstream channel located on the shared medium, a lower speed telephone return line, a lower speed cellular return channel, an over-the-air RF transmission and a point-to-point electromagnetic transmission.

44. (Amended) [A] The communication system according to claim 39, wherein the channel switcher comprises:

equipment for determining the availability of at least one channel; and
a channel selector for selecting as [the] other channel a suitable channel from [the] available channels.

45. (Amended) [A] The communication system according to claim 44, wherein the channel selector operates to select channels based on suitability factors of the available channels, the factors including at least one of channel quality, type of service required, operating characteristics of a client associated with the communication channel and configuration restrictions.

46. (Amended) [A] The communication system according to claim 44, wherein the channel selector comprises:

a sender that sends a message to a remote interface associated with the communication channel, the message requesting the remote interface associated with the communication channel to switch to a different [the other] channel, and

a receiver for receiving a response from the remote interface on the [other] different channel.

47. (Amended) [A] The communication system as in claim 39 further including a detector that detects a characteristic of [an] said upstream channel, the detector operating at an upstream location.

49.(Amended) [A] The communication system according to claim 48 wherein the network management system further includes
a detector that detects a quality characteristic of a communication channel, wherein the switcher switches to another communication channel based on the detected quality characteristics.

50. (Amended) [A device] The switcher according to claim 48 wherein the switcher comprises circuitry configured for
switching to another channel if a detected quality characteristics deviates sufficiently from a reference.

51. (Amended) [A device] The switcher according to claim 48 wherein the switcher[ing device] comprises:
circuitry configured for switching to another communication channel based on sufficient deviation of detected quality characteristics from corresponding predetermined norms.

52. (Amended) [The device] The switcher according to claim 48 wherein [the] quality characteristics are selected from time from last operability indication, signal-to-noise ratio, error frequency and busy signal.



HYBRID ACCESS SYSTEM WITH REMOTE DEVICE MONITORING SCHEME

This application is a Continuation of copending Application Serial No. 08/700,988 of Eudardo J. Moura and Jan M. Gronski filed August 21, 1996 for Asymmetric Hybrid Access System and Method, the contents of which are hereby incorporated by reference (now U.S. Patent No. 6,005,850).

Field of Invention

This invention relates to systems and methods for extending a high-speed network to remote locations using an asymmetric hybrid access system.

Background of the Invention

Current data communication systems typically use symmetric communication paths between transmit and receive sites, which have substantially the same data rates and use the same media in both directions. Such media may include coaxial, fiber optic, or telephone twisted-pair lines. Some networks alternatively use broadcast only paths. However, no current network combines the flexibility of full-duplex symmetric networks with the cost effectiveness of broadcast only networks.

Prior attempts at achieving asymmetric data communications included modems with very low speed return channels or systems combining a low speed broadcast channel with telephone return lines. However, no prior systems were able to extend a symmetric high-speed backbone network to remote locations at high speed using an asymmetric hybrid access system. Known prior asymmetric systems are limited to low speed links.

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